# Large scale biodiversity assessment with bird sound

**Sunny Tseng**, Dexter Hodder, and Ken Otter
**University of Northern British Columbia, BC, Canada, John Prince Research Forest**

Advances in autonomous recording units (ARUs) and automatic species identification algorithms (e.g., BirdNET) have enabled broad-scaled acoustic monitoring of bird biodiversity.

We conducted a comprehensive project to compare the species composition detected by ARUs versus human observers. Furthermore, we investigated the monitoring effort required for ARU projects.



2020 2021 2022

**30,000 hectares** **66 recorders** **3 seasons**

**96 species ARUs** **93 species eBird** → 57% overlap → **120 species total**

✓ Detected rare vocal species (i.e., crane, owls, woodpeckers)

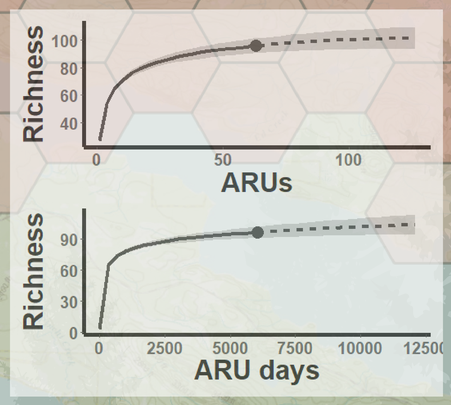
✗ Didn't detected non-vocal species (i.e., collared dove, peregrine falcon); species vocalize infrequently (i.e., bittern, grouse, hummingbird); species infrequently encountered in sites (i.e., grebe, ducks)

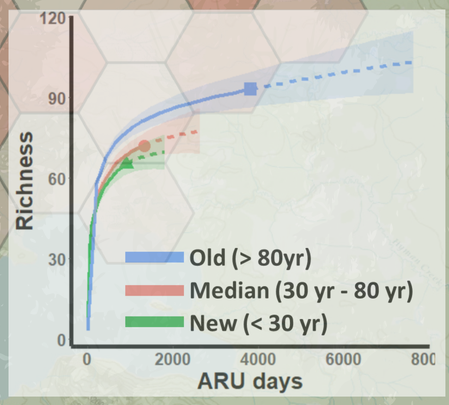
**50 ARUs** with **2,500 ARU days**

Sufficient ARU effort in surveying bird composition across 13,000 hectares in the dry sub-boreal spruce biogeoclimatic zone



Bird richness is higher in sites with older forest age (> 80 yr)




ARUs, combined with BirdNET, are a time-, cost-, and labor-efficient method to survey bird communities across a large spatiotemporal scale. Subsequent analysis will investigate important features for maintaining bird biodiversity.